



630 E. Diamond Avenue, Suite J/K  
Gaithersburg, Maryland 20877  
(301) 721-2663 • (301) 721-0858

## **BOILOUT PROCEDURE FIRETUBE STEAM BOILERS**

### **PREFACE**

The internal surfaces of a newly installed boiler may be contaminated with oil, grease or other protective coatings used in the manufacturing process. Such coatings must be removed since they reduce the heat transfer rate and could result in tube rupture from overheating. The primary objective of pre-cleaning a boiler is to remove these impurities.

Bond Water Technologies recommends that the following procedure be performed on each new boiler put in service and on existing boilers each time tubes are replaced.

**NOTE:** Before beginning the boil-out procedure, the burner must be ready for firing. The operator should refer to the procedure outlined under the burner operation section in the operating manual.

### **PROCEDURE**

1. Clear the boiler for firing by taking the standard precautions.
2. Inspect all internal waterside surfaces, including tubes, and remove any debris. It may be necessary to use a high pressure hose to flush out inaccessible areas.
3. Replace the regular gauge with a temporary gauge glass that can be discarded after the cleaning.
4. Attach an overflow pipe to one of the top boiler openings and route it to a safe point of discharge. A relief or safety valve tapping may be used.
5. Remove all water relief valves and steam safety valves in order to avoid contamination. Refer to the manual when reinstalling these valves after cleaning.
6. Fill the pressure vessel with clean water until the top tubes are covered. Bond Water Technologies recommends that the temperature of the fill water be greater than 70 degrees F.
7. Add the recommended amount of BOND 8050 Boil-out Cleaner. Never pump the cleaning chemical into the boiler before adding water.
8. Continue to fill the boiler to the top.
9. Fire the boiler intermittently at a low rate sufficient to maintain the solution at the boiling point. No steam pressure should be generated. Continue this step for at least eight hours.

10. Throughout the entire process, each blowdown point or valve should be blown at least once every two hours. Blow the surface and/or continuous blowdown points first, followed by the other blowdown points lower on the boiler. After each blowdown cycle, the water level should be brought back to full. After each blowdown cycle, the Total Alkalinity of the cleaning solution should be checked using an Alkalinity Test. If the level drops below 2500 ppm, additional BOND 8050 Boilout Cleaner should be added to the system.
11. After the boil-out period, allow a small amount of water to enter the boiler to create a slight overflow condition. Continue to boil and overflow until the water clears.
12. Shut the burner down.
13. Allow the boiler to cool to 120 degrees F. Drain the boiler using caution to insure that the water is discharged safely and in accordance with local, state and federal guidelines.
14. Remove the hand hole plates and wash the waterside surfaces thoroughly using a high pressure hose.
15. Inspect all waterside surfaces. If they are not clean, the procedure must be repeated.
16. Reinstall the regular gauge glass and the safety or relief valves.
17. If the boiler is to be put into service immediately, fill with water and fire until the water is heated to a least 180 degrees F.
18. If the boiler is not going into service, refer to the Bond Water Technologies Boiler Shutdown and Lay-up Procedures.

NOTE: Condensate return should be discharged until tests indicate that all undesirable impurities have been eliminated.

**CAUTION:** THE CHEMICALS USED IN THIS PROCEDURE ARE CORROSIVE TO EYES AND SKIN. ALWAYS REFER TO THE MATERIAL SAFETY DATA SHEET TO INSURE THAT THE PROPER SAFETY EQUIPMENT AND PRECAUTIONS ARE PRESENT.